

**DRIVER DOCUMENTATION**  
**Beckhoff TCAdsDII**  
**FOR WINDOWS 9x/NT 4.0/2000**  
**BECKHTC32.EXE**

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Revision 1; Date: 23. Sep 2002

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# 2 HARDWARE

## 2.1 Connection

The communication from zenOn to Beckhoff is done with the TCAdsDll.

## 2.2 Software installation

### 2.2.1 PC

- a) Beckhoff TCAdsDll setup has to be installed on the PC
- b) Copy driver BeckhTC32.EXE to the current zenOn directory, if it does not exist there.

### 2.2.2 CE

The file TcAdsDllCe.dll and the configuration file ,default.bec' is required for communication with TwinCAT. They have to be in the same directory as the driver file (driver for CE: BeckhTc32.dll)

## 2.3 zenOn.ini entries

[BECKHOFF]

SIMUL=0                      0....Hardware mode      1....Simulation mode

## 2.4 Definition of a driver in zenOn

See online help "Process data model and variable definition"

## 2.5 Limitations

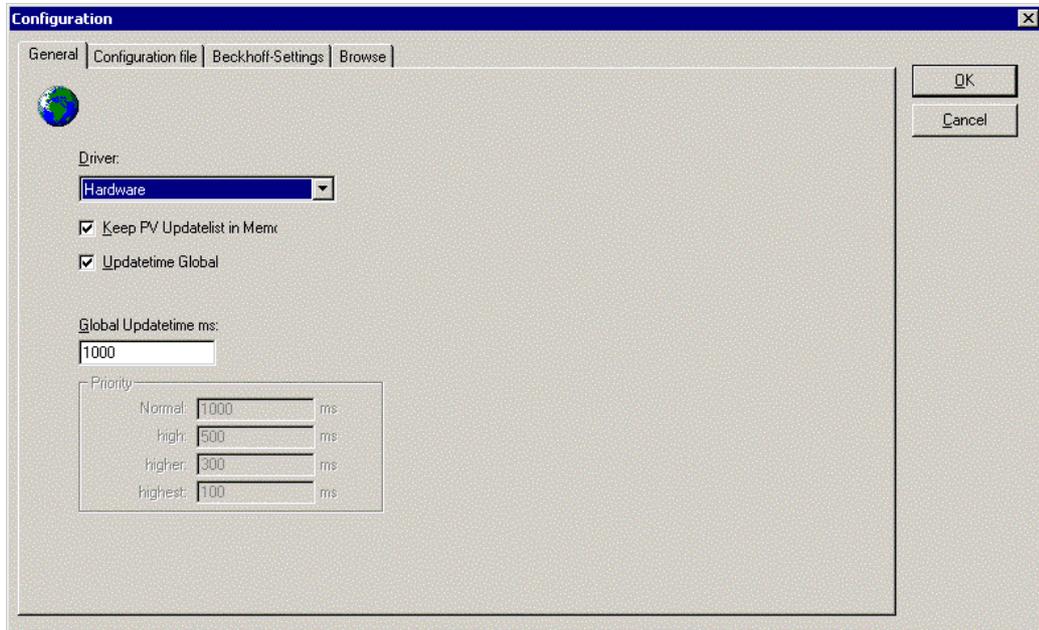
none

## 2.6 Bus address

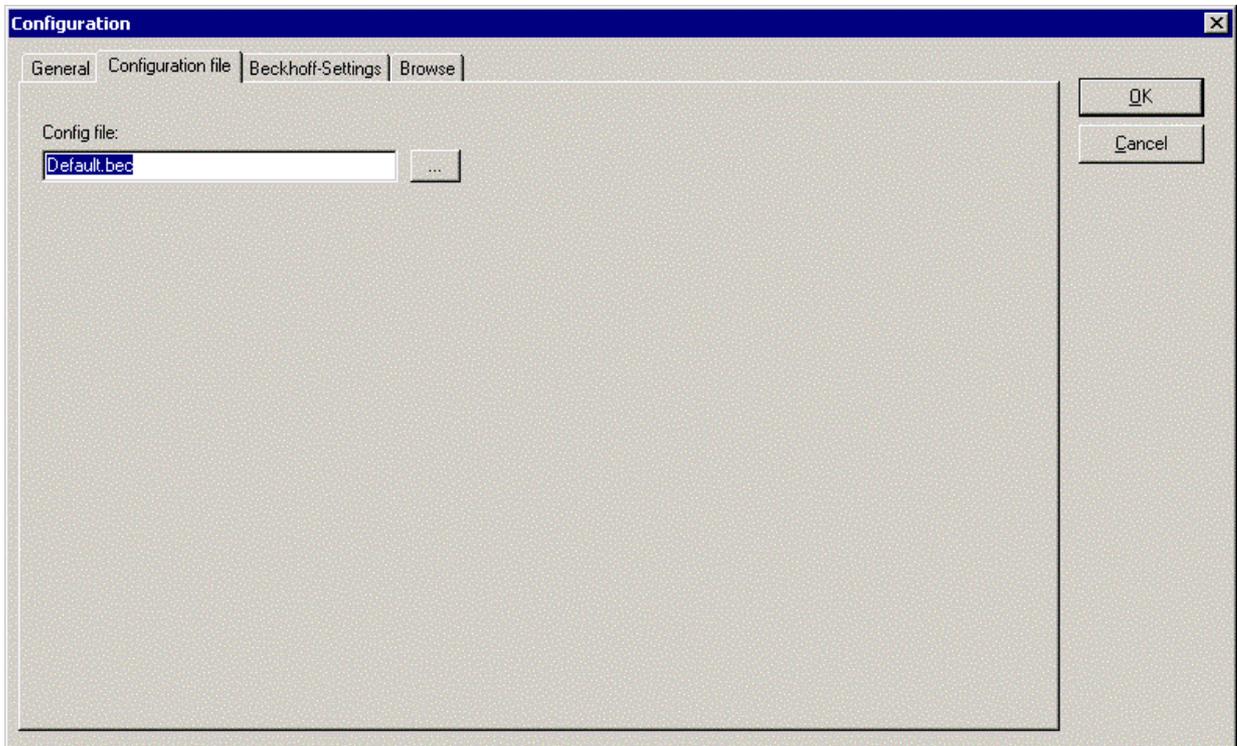
**Do not change!**

# 3 DRIVER CONFIGURATION

## 3.1 General



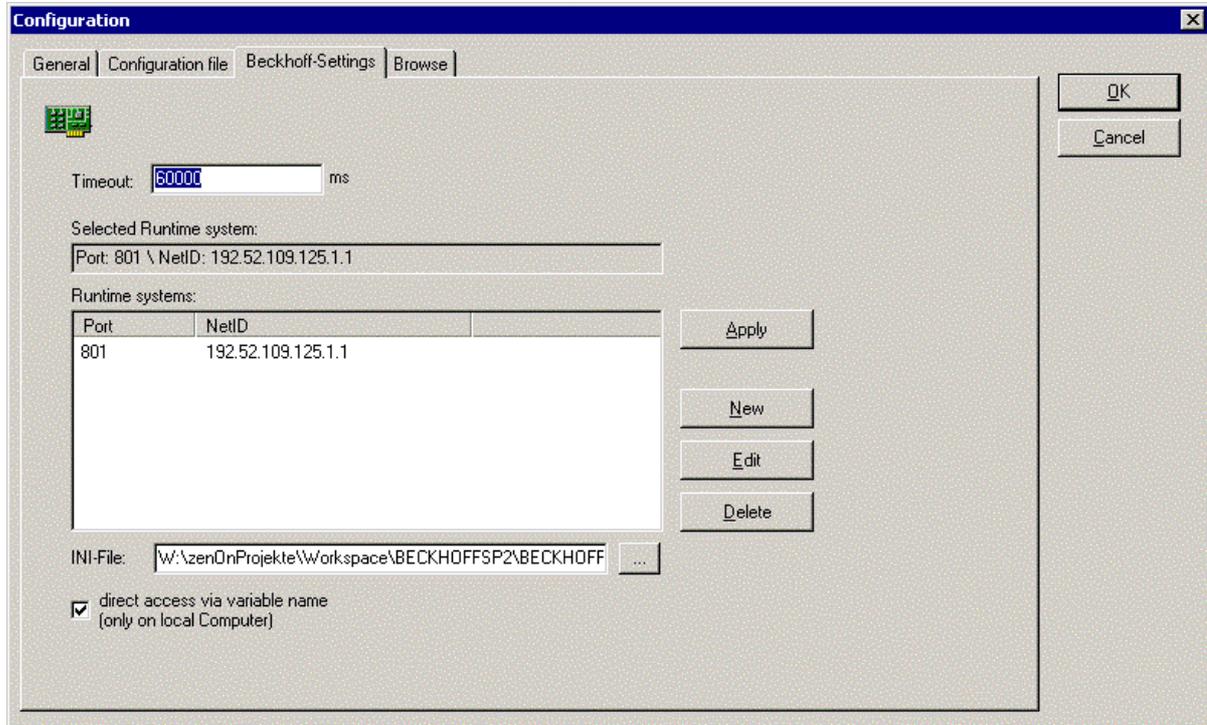
## 3.2 Configuration file



### 3.2.1 Configuration file

Here the name and the path of the configuration file (\*.bec) must be entered. This file is needed for the driver communication.

### 3.3 Beckhoff-Settings



#### 3.3.1 Timeout

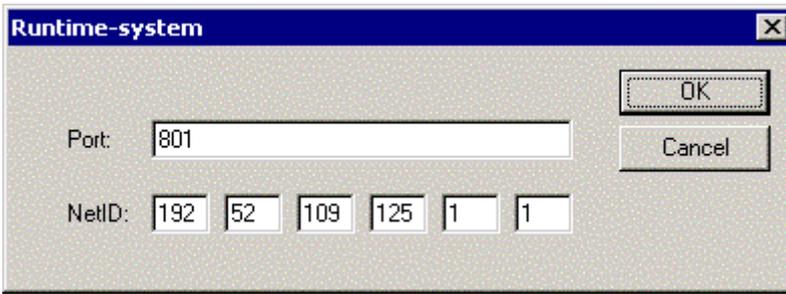
Here the timeout in milliseconds must be entered. If a communication error with the TwinCAT PLC occurs (e.g. the PLC does not respond), the communication is interrupted after that time and the driver status is set to *invalid*.

#### 3.3.2 Selected Runtime System

Here the currently selected Run-Time System is displayed. The selected Run-Time System is needed for the next dialog "Browse". From this Run-Time System the variables are read, that then can be transferred to zenOn (see 3.4 "Browse").

#### 3.3.3 Runtime Systems

This list displays all defined Run-Time Systems (port and NetID). With a doubleclick on a defined Run-Time System it is set as active Run-Time System and entered in the Box "Selected Run-Time System". Activating is also possible with the button "Apply" (after having selected the desired Run-Time System). A new Run-Time system can be added with pressing the button "New" and entering the necessary data in the following dialog.



A defined RTS can be edited with selecting the desired RTS and then pressing the button "Edit"; then edit the data in the following dialog.

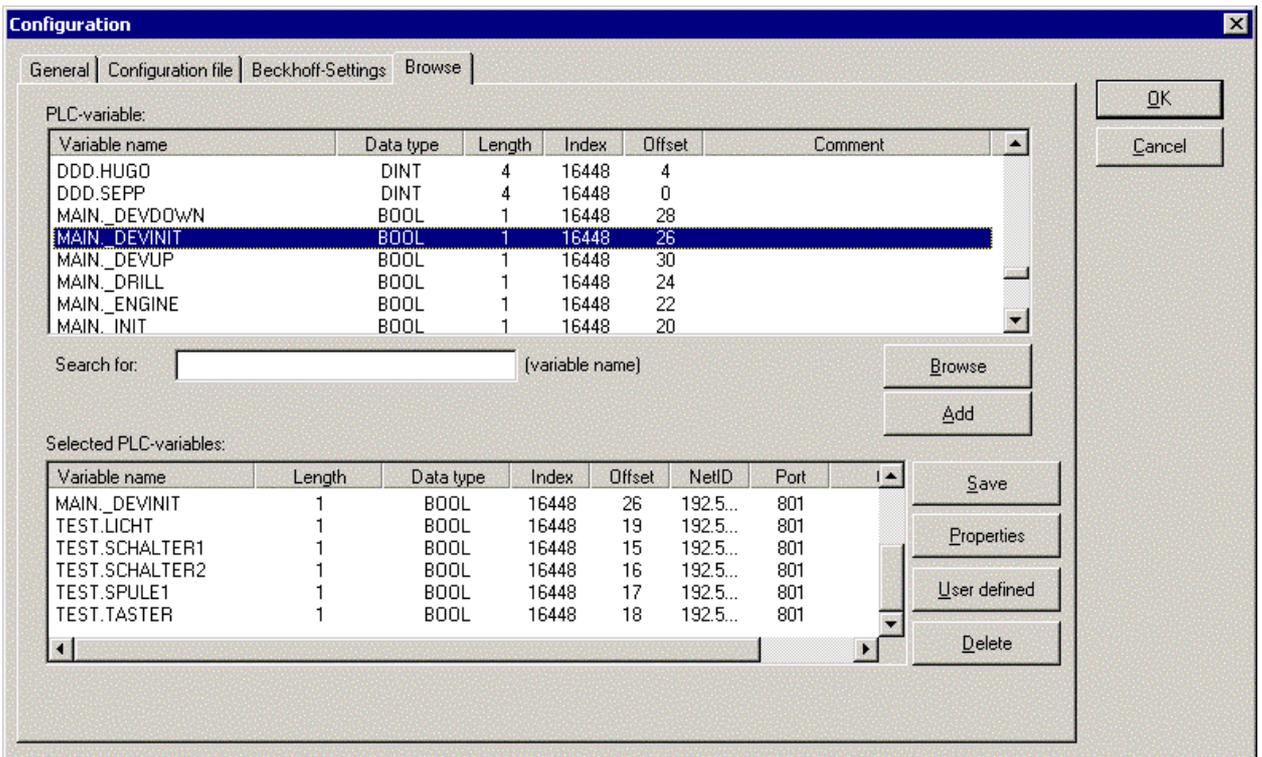
### 3.3.4 INI file

Here the path and the name of the INI files can be entered, where the defined Run-Time Systems are saved.

### 3.3.5 Direct access via variable name (only on local computer)

If this checkbox is activated, variables are addressed by their name, offset is unused. This option is only available for variables of a local TwinCAT PLC, on the same PC.

## 3.4 Browse



### 3.4.1 PLC variables

In this list all variables defined in the soft-PLC are displayed.

### 3.4.2 Browse

With pressing this button all variables are downloaded from the TwinCAT server and displayed in the window "PLC-Variables".

### 3.4.3 Add

The selected symbols in the list "PLC-Variables" are displayed in the list "Added PLC-Variables". Already existing entries are updated, if the symbols in the PLC have been changed since the last transfer. On adding the added symbols get an internal identification number, that is used as an address for creating the zenOn variables.

If symbols are deleted in the lower list and newly added then, they get a new identification number. zenOn variables already created with the original number have to be edited then!

### 3.4.4 Added PLC-Variables

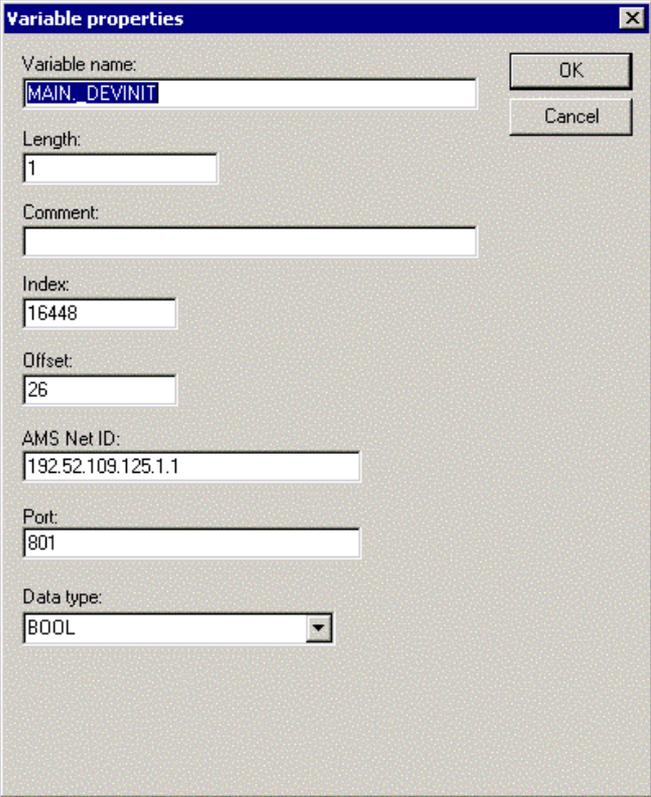
In this list all variables are displayed, that were transferred from the list "PLC-variables".

In order to add a variable, click on it in the list "PLC-Variable" and press the button "Add" then. Now the variable is transferred to the lower list. These variables can be added to the zenOn variables with the button "Selct" lateron.

### 3.4.5 User defined

In order to define a variable by hand, click on the button "User-defined" and enter the variable data in the following dialog.

### 3.4.6 Properties



Single variable data can be edited with the button "Properties".

### 3.4.7 Delete

To delete a variable simply click on the button "Delete" (after having selected the variable).

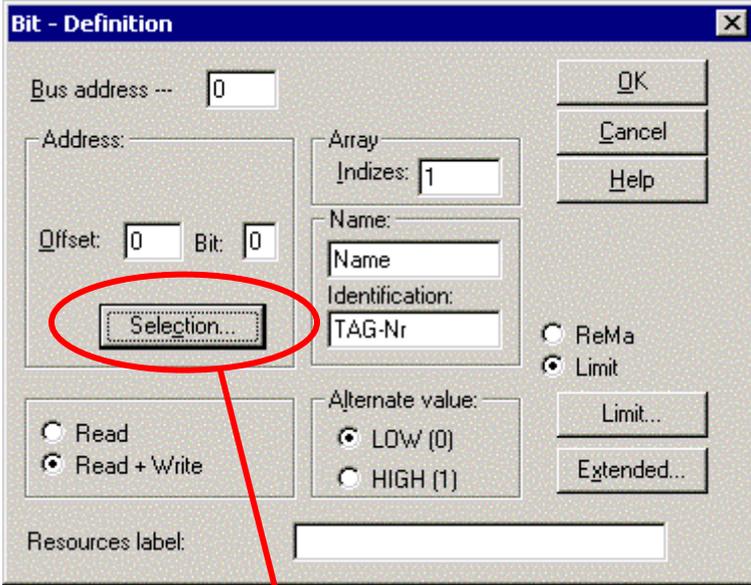
### 3.4.8 Save

Before leaving the dialog the BEC file has to be saved. To do this simply press the button "Save" and the BEC file is saved.

If the dialog is closed without saving, all changes are lost. So do not forget to save the changes!

### 3.4.9 Creating variables in the Editor

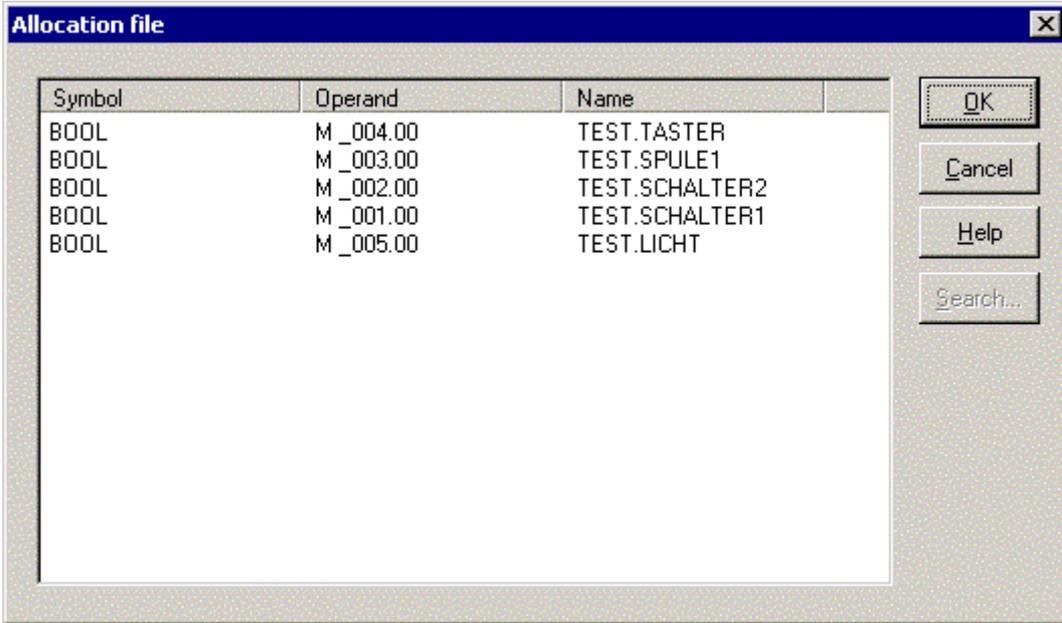
Variables are created with the allocation file.



The "Bit - Definition" dialog box contains the following fields and controls:

- Bus address: 0
- Address: (empty)
- Offset: 0, Bit: 0
- Array: Indices: 1
- Name: Name
- Identification: TAG-Nr
- Radio buttons:  ReMa,  Limit
- Alternate value:  LOW (0),  HIGH (1)
- Buttons: OK, Cancel, Help, Limit..., Extended...
- Resources label: (empty)

A red circle highlights the "Selection..." button, with a red arrow pointing to the "Allocation file" dialog box below.



The "Allocation file" dialog box displays a table with the following data:

Symbol	Operand	Name
BOOL	M_004.00	TEST.TASTER
BOOL	M_003.00	TEST.SPULE1
BOOL	M_002.00	TEST.SCHALTER2
BOOL	M_001.00	TEST.SCHALTER1
BOOL	M_005.00	TEST.LICHT

Buttons: OK, Cancel, Help, Search...

Pressing the button "Selection..." in the variable definition opens the allocation file. The variables have a fixed ID (offset) which should not be changes; otherwise incorrect connections can be displayed.

# 4 PROCESS VARIABLE DEFINITION

## 4.1 Objects for process variables in zenOn

Object	Read	Write	Comment
Configuration			
Bit marker	Y	Y	Address range (Offset) from 0 - 65535, bit 0 - 7
Byte marker	Y	Y	Address range (Offset) from 0 - 65535
Word marker	Y	Y	Address range (Offset) from 0 - 65535
Input bit	Y	Y	Address range (Offset) from 0 - 65535, bit 0 - 7
Input byte	Y	Y	Address range (Offset) from 0 - 65535
Input word	Y	Y	Address range (Offset) from 0 - 65535
Output bit	Y	Y	Address range (Offset) from 0 - 65535, bit 0 - 7
Output byte	Y	Y	Address range (Offset) from 0 - 65535
Output word	Y	Y	Address range (Offset) from 0 - 65535

## 4.2 Examples for all possible zenOn data types:

PLC	zenOn
IX 1.0	Input bit offset 1 bit 1
I1	Input byte offset 1 low-order
MB 100	Byte marker offset 100 low-order
MX 100.0	Bit marker offset 100 bit 0
MW 100	Word marker offset 100
Q1	Output byte offset 1 low-order
QW 60000	Output word offset 60000
QX 1.1	Output bit offset 1 bit 1

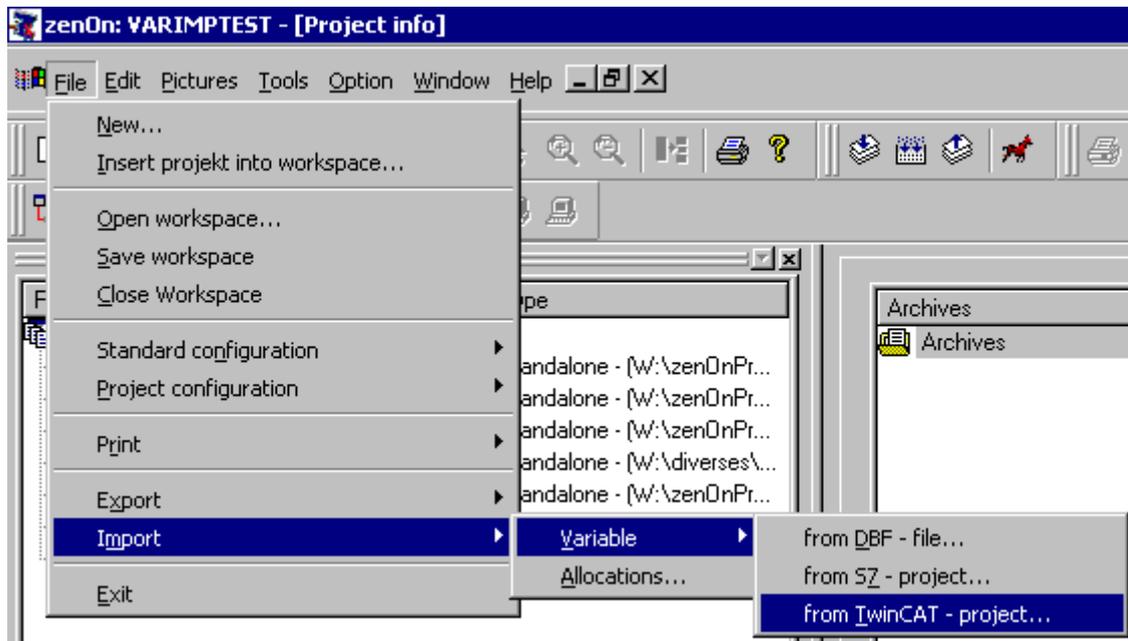
# 5 COMMUNICATION PROBLEMS

## 5.1 Check list:

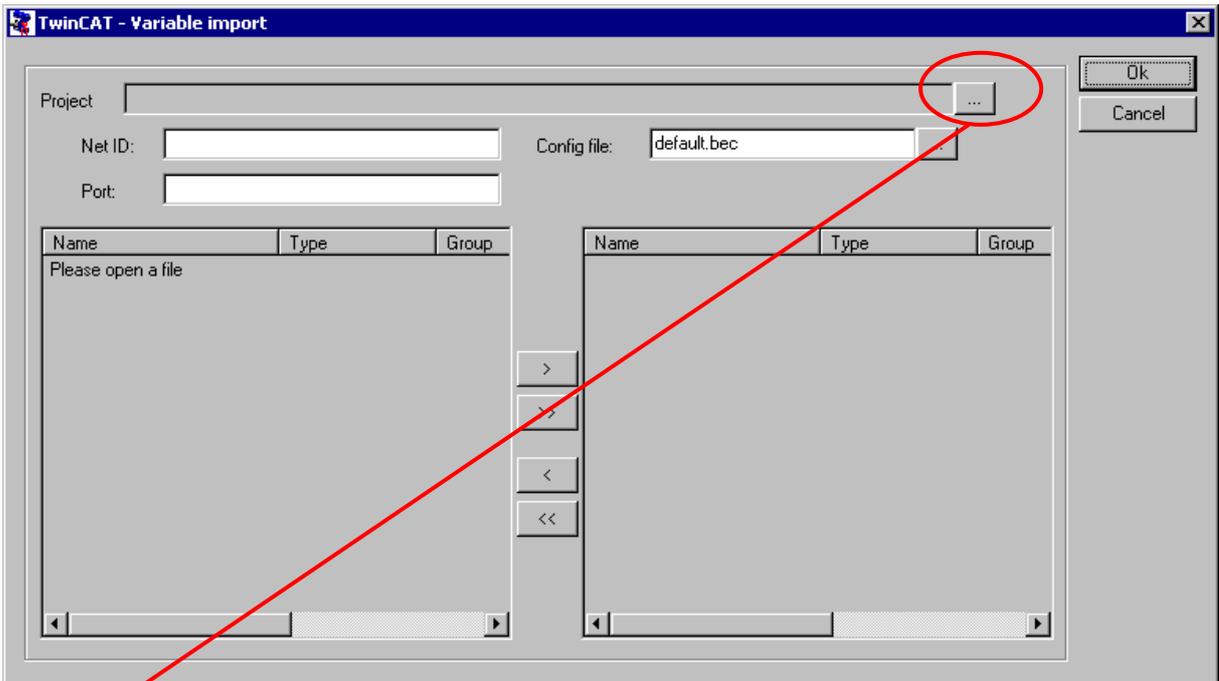
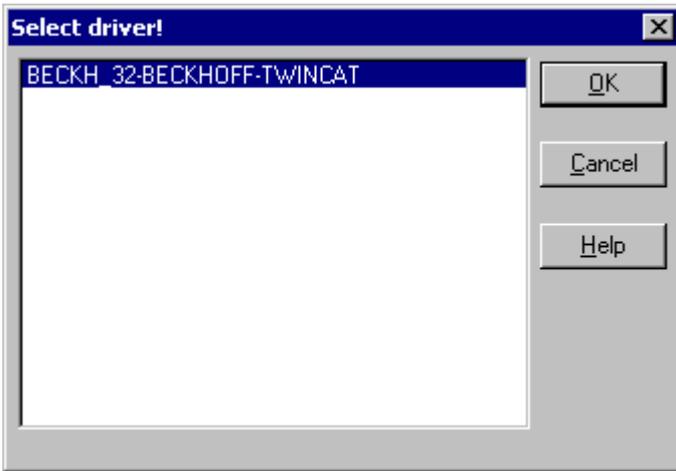
- Are the used datablocks correctly defined in the PLC?
- Are the files TcAdsDllCe.dll and the configuration file ,default.bec' copied to the CE device?
- Have you analyzed the errorfile (which errors did occur)?
- Send the project to [support@copadata.at](mailto:support@copadata.at).

## 5.2 Tools

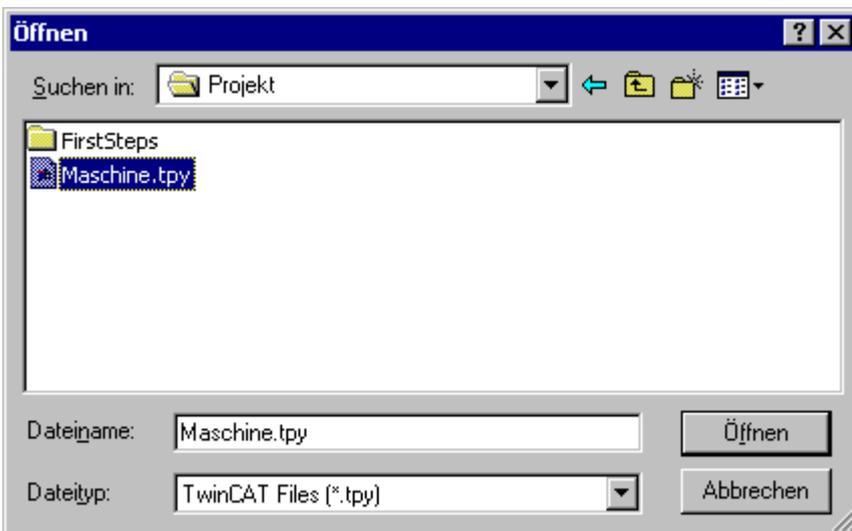
### 5.2.1 *Import variable from TwinCAT project*

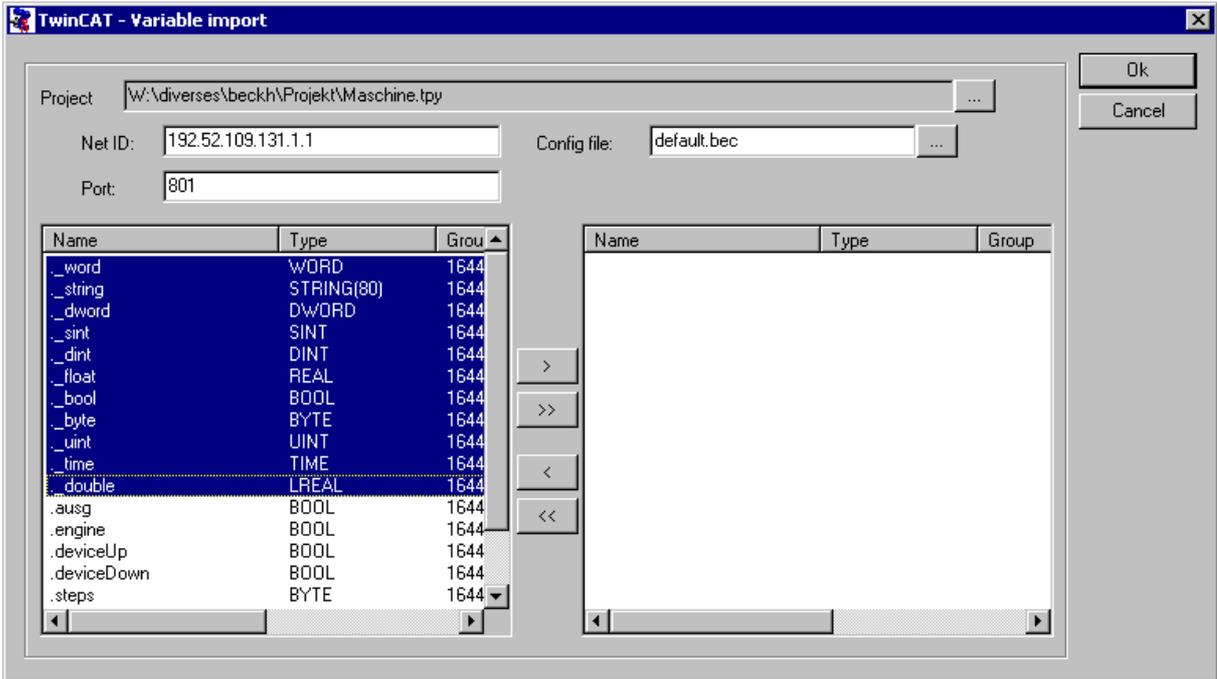


Select a driver:

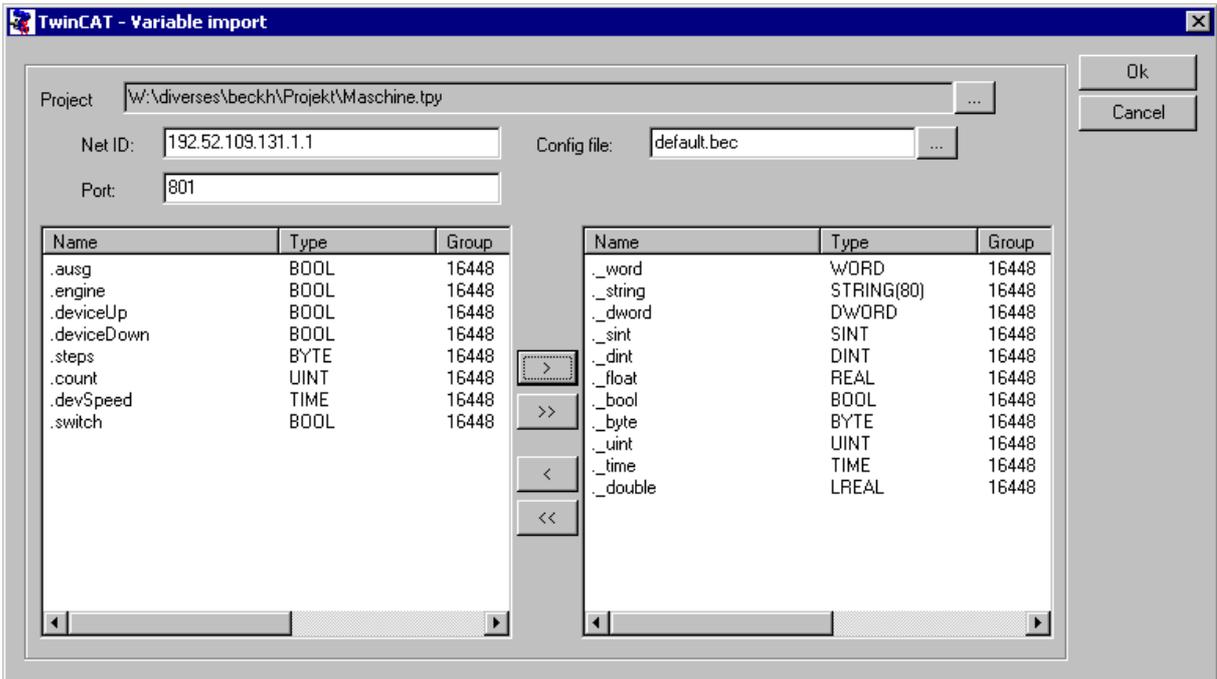


Click the [...] button to select a TwinCAT project .tpy file:

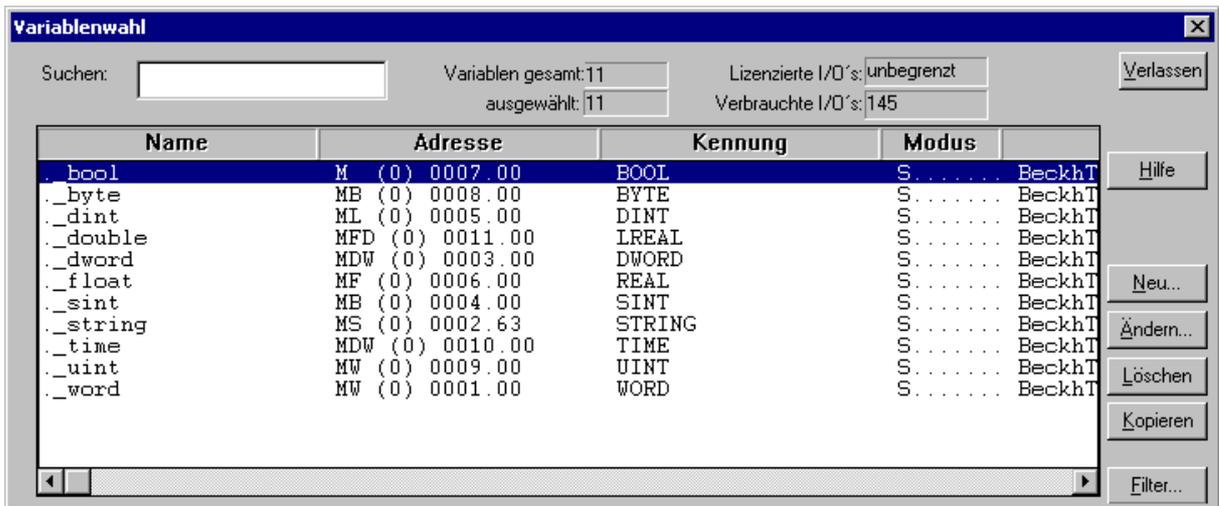




The Net ID and Port number are wrapped from the .tpy file. They can also be edited manually. The button [>] takes over all selected variables, the [>>] button takes over all variables from the TwinCAT project.



Take over the variables to zenOn by clicking the OK button.



Variables that are in the variable list before importing new variables are kept, if they don't have the same name as an imported one.